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Klaus Krejci

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EDWARDS ANGELL PALMER & DODGE LLP

P.O. BOX 55874

BOSTON, MA 02205

EXAMINER

YOUNG, NATASHA E

ART UNIT

PAPER NUMBER

1797

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DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                                      |                                      |  |
|------------------------------|--------------------------------------|--------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/521,418 | <b>Applicant(s)</b><br>KREJCI ET AL. |  |
|                              | <b>Examiner</b><br>NATASHA YOUNG     | <b>Art Unit</b><br>1797              |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 September 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☐ Claim(s) 15-27 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 15-18 and 21-27 is/are rejected.
- 7) ☒ Claim(s) 19 and 20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 15 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Grabenhorst et al (DE 19542942 A1).

Regarding claims 15 and 22, Grabenhorst et al discloses a device for introducing gas into a fluidized bed comprising at least one gas inlet pipe located underneath and/or above the fluidized bed, wherein the gas inlet pipe has gas-swirling means at its mouth and a fluidized reactor bed comprising the device (see Abstract; specification; and figure 1).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grabenhorst et al (DE 19542942 A1).

Regarding claim 18, Grabenhorst et al does not disclose a device wherein the gas-swirling means comprise a thread.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the gas-swirling means comprise a thread, since it was known in the art that threads were used to couple components such as a pipe to a spray-tip or nozzle (see MPEP 2144.03 (A-E)).

Claims 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grabenhorst et al (DE 19542942 A1) in view of Tokura et al (US 4,074,975).

Regarding claim 16, Grabenhorst et al does not disclose a device wherein the gas-swirling means form at least one narrowing or widening of the pipe lumen.

Tokura et al discloses a swirling tube (18) such that gas-swirling means form at least one narrowing or widening of the pipe lumen (see figures 1 and 5 and column 4, line 39 through column 5, line 22).

It would have been obvious to one having skill in the art at the time the invention was made to modify the teachings of Grabenhorst et al with the teachings of Tokura et al such that the gas-swirling means form at least one narrowing or widening of the pipe lumen for better mixing between the gas and solid resulting in improved elimination of noxious compounds.

Regarding claim 17, Grabenhorst et al disclose a device wherein the narrowing has at least one edge.

Tokura et al discloses wherein the narrowing has at least one edge (see figures 1 and 5).

Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grabenhorst et al (DE 19542942 A1) as applied to claim 15 above, and further in view of Bagley et al (US 4,329,526).

Regarding claim 21, Grabenhorst et al does not disclose a device wherein the gas comprises ethane, oxygen and/or hydrogen chloride.

Bagley et al discloses that it is known to have a device wherein the gas comprises ethane, oxygen and/or hydrogen chloride and a fluidized reactor bed comprising holes in a plate or plates may be equipped with caps, bubble caps, risers and tuyer or distributors, ball-check valves (see column 1, line 18 through column 2, line 32).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Grabenhorst et al with the teachings of Bagley et al such that a device comprises a gas inlet wherein the gas comprises ethane, oxygen and/or hydrogen chloride and a fluidized reactor bed comprising a device of claim 15 for the predictable result of improved distribution of a gas in a fluidized bed reactor.

Claims 23-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bagley et al (US 4,329,526) in view of Grabenhorst et al (DE 19542942 A1) and Cowfer et al (US 6,177,599 B1).

Regarding claim 23, Bagley et al discloses that it is known to have a device wherein the gas comprises ethane, oxygen and/or hydrogen chloride and a fluidized reactor bed comprising holes in a plate or plates may be equipped with caps, bubble caps, risers and tuyer or distributors, ball-check valves (see column 1, line 18 through column 2, line 32) and a process for the production of chlorinated hydrocarbon with a fluidized bed reactor comprising a device for introducing gas, the method comprising: introducing hydrocarbon, oxygen and/or hydrogen chloride into a fluidized bed comprising a catalyst, wherein the device comprises at least one gas inlet pipe located

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underneath and/or above the fluidized bed (see Abstract; figures 1-2; column 1, lines 18-35; and column 2, lines 26-30).

Bagley et al does not disclose a device wherein the gas inlet pipe has gas-swirling means at its mouth and the oxychlorination of ethylene to 1,2-dichloroethane and ethylene, oxygen, and HCL are introduced into a fluidized bed.

Grabenhorst et al discloses a device for introducing gas into a fluidized bed (see Abstract) comprising: at least one gas inlet pipe located underneath and/or above the fluidized bed, wherein the gas inlet pipe has gas-swirling means at its mouth (see Abstract and figure 1).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Bagley et al with the teachings of Grabenhorst et al such that the fluidized bed reactor comprises a device wherein the gas inlet pipe has gas-swirling means at its mouth for the predictable result of improved distribution of a gas in a fluidized bed reactor.

Cowfer et al discloses the oxychlorination of ethylene to 1,2-dichloroethane and ethylene, oxygen, and HCL are introduced into a fluidized bed (see column 5, lines 46-59).

Cowfer et al does not disclose bubble caps or distributors.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined teachings of Bagley et al and Grabenhorst et al with the teachings of Cowfer et al to produce 1,2-dichloroethane, an important

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intermediate in the production of vinyl chloride monomer (see Cowfer et al column 1, lines 30-34).

Regarding claim 24-27, Bagley et al discloses the gas inlet pipe is arranged underneath the fluidized bed (see figure 1) and a regulated gas velocity (see column 5, lines 33-34).

Bagley et al does not disclose the gas current is discharged at an average discharge velocity in the range of from 0.5 to 10 m/s.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to regulated the gas current such that an average discharge velocity is in the range of from 0.5 to 10 m/s, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

### ***Allowable Subject Matter***

Claims 19-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art references do not discloses or suggest a device wherein the gas-swirling means comprise at least one bead and wherein the gas-swirling means comprise at least one screen, at least one turbulence grid and/or at least one perforated diaphragm.



### ***Response to Arguments***

Applicant's arguments, see Remarks, page 9, filed September 29, 2008, with respect to objection to the drawings and specification have been fully considered and are persuasive. The objection of drawings and specification has been withdrawn.

Applicant's arguments, see Remarks, pages 9-12, with respect to the rejection(s) of claim(s) 15-18 and 21-27 under U.S.C 102(b) and 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Grabenhorst et al (DE 19542942 A1).

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See Hedrick (US 5,328,592).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NATASHA YOUNG whose telephone number is 571-270-3163. The examiner can normally be reached on Mon-Thurs 7:30 am-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Griffin can be reached on 571-272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/N. Y./

Examiner, Art Unit 1797

/Walter D. Griffin/

Supervisory Patent Examiner, Art Unit 1797